

1099,608

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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Date of Application and filing Complete Specification: Sept. 16, 1966.

No. 41489/66.

Complete Specification Published: Jan. 17, 1968.

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Index at acceptance:—B8 T8D

Int. Cl.:—B 65 d 47/08

COMPLETE SPECIFICATION

Dispensing Closure

We, POLYTOP CORPORATION, a corporation organised and existing under the laws of the State of Massachusetts, United States of America of 100 Graham Drive, Slatersville, Rhode Island, United States of America do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to dispensing closures, and more specifically to dispensing closures having a means for locking a spout member in an open position.

The term "dispensing closures" has been developed as designating closure structures in which a spout is rotatably mounted upon a cap or similar structure in such a manner that the spout is capable of being rotated between open and closed positions. A large number of such structures are known and a smaller number of such structures are being commercially manufactured and used at the present time. These various different closures differ from one another in the manner in which they are constructed. Frequently a material difference between the various different dispensing closures lies in the manner in which the spout part is either attached to, supported on or assembled with respect to what is referred to herein as a cap part.

Known different types of dispensing closures as are indicated briefly in the preceding discussion are not considered to have provided the solution to a problem relating to the use of these closures in the application of fluids in conjunction with the problem of forming and maintaining a seal in these closures against leakage between a spout and a cap structure. This problem is particularly pertinent in the use of dispensing closures so as to apply various materials such as hair dye to the scalp, so as to apply an adhesive over a wide area on a surface or the like. In such applications

it is desired to "lock" the spout part in an open position so that it will not accidentally be moved to a closed position.

According to the present invention there is provided a dispensing closure having a cap part and a spout part, said spout part having a base, a spout extending from said base and a passage extending through said base and said spout, said cap part having a top, said top having a depression located therein, an opening located so as to lead through said top from the bottom of said depression, sealing means for forming a seal against said base located within said depression around said opening, and means for rotatably holding said spout part, said means engaging portions of said spout part so as to rotatably mount said spout part, in such a manner that said spout part is capable of being rotated between an open position in which said passage is aligned with said opening to a closed position in which said passage is spaced from said opening, said base engaging said sealing means during such rotation between said open and closed positions, a deformable wall extending from said top and spaced from said opening and said sealing means, a protuberance located on said base adjacent to said wall in a position so that as said spout is rotated from said open position to said closed position it engages said wall, temporarily deforming said wall so as to allow said protuberance to pass from adjacent to one portion of said wall to adjacent another portion of said wall, said wall and said protuberance being located so that the pressure exerted by said base of said spout part on said sealing means is maintained as said spout part is rotated between said open and closed positions in order to avoid or reduce the possibility of leakage between said base of said spout part and said sealing means.

The invention will be described by way of example with reference to the accompanying drawings, wherein:—

Figure 1 is a top plan view of a dispensing closure embodying a locking structure or means as herein indicated;

Figure 2 is a cross-sectional view taken at line 2—2 of Figure 1; and

Figure 3 is a cross-sectional view taken at line 3—3 of Figure 1.

In the accompanying drawings there is shown a closure 10 which is constructed generally as indicated in British Specification 798,900. This closure 10 includes a cap part 12 and a spout 14.

The cap part 12 illustrated includes a generally cylindrical skirt 16 provided with internal threads or similar means 18 for attaching the cap part to a container (not shown). One end of this skirt 16 is closed by means of a top 20. This top 20 has a depressed cavity 22 formed therein; an opening 24 is located so as to lead from the bottom of this cavity 22 to the top 20. A sealing ring 26 is located in the base of the cavity 22 around the opening 24. A container sealing ring 24 may be located within the skirt 16 so as to be dependent from the top 20.

In the closure 10 the cap part 12 includes a continuous U-shaped wall structure 30. This wall structure 30 includes roughly parallel side walls 32, a back wall 34 and connecting wall-like sections 36. Each of these wall-like sections 36 has tapered entrance walls 38 leading to a cylindrical bearing opening 40 constructed in such a manner that its entrance is smaller than its diameter. These openings 40 are aligned with one another.

The sections 36 are designed so that shafts or trunnions 42 extending from a cylindrical base 44 forming a part of the spout 14 may be inserted into the openings 40 and held within them so that this base 44 bears against the sealing ring 26 in order to form a seal therewith at all times. The spout 14 also includes a protruding extremity or spout 46 extending from the base 44. A passage 48 extends through the spout or extremity 46 and the base 44.

Normally the spout 14 is maintained in a closed position as shown in the various figures of the drawing in which the extremity or spout 46 lies between the side walls 32 roughly parallel to the top 20. The spout 14 is however capable of being rotated to an open position as shown by phantom lines as indicated in Figure 2 of the drawing in which the spout extends substantially at right angles to the top 20. In this open position the passage 48 is in communication with the opening 24 in the top 20. It will be noted that during the rotation of the spout 14 between such open and closed positions the pressures on the sealing ring is not significantly disturbed or distended or otherwise deformed in any manner. This is considered to be important in effectively eliminating any possibility of leakage between the spout 14 and the cap part 12.

In the closure 10 there is provided on the base 44 as an integral part of the spout 12 a protuberance 50 which is located so that as the spout 14 is moved from an open to a closed position as described it engages the back wall 34. If this back wall 34 was not of a resilient character further rotation of the spout 14 to an open position would be prevented by this protuberance 50 engaging the wall 34. However in the closure 10 the entire cap part 12 is preferably formed of a deformable, resilient material which after being deformed is capable of returning to substantially its initial configuration. Among such materials are common polyolefins including low density, branched chain polyethylene, high density, essentially linear polyethylene and various polypropylenes such as common polypropylene. The back wall 34 illustrated is sufficiently thin and is sufficiently unsupported so that such deformation is possible.

As a result of this as a spout 14 is moved to an open position from a closed position the protuberance will tend to deform or distend this back wall 34 so as to permit the spout 14 to be moved to the open position. When the spout 14 is in the open position the protuberance 50 will fit within a small cavity or recess 52 generally between the back wall 34 and the top 20. When the protuberance 50 is in this position the back wall 34, will, because of the pressure upon it being relieved, return to its initial configuration, "locking" the spout 14 in an open position. From such an open position the spout 14 may always be easily returned to a closed position by applying pressure to it, again deforming temporarily the back wall 34.

It will be realised that any deformable wall or wall-like structure or means can be employed in place of the back wall 34 in order to achieve the results achieved with this invention.

WHAT WE CLAIM IS:—

1. A dispensing closure having a cap part and a spout part, said spout part having a base, a spout extending from said base and a passage extending through said base and said spout, said cap part having a top, said top having a depression located therein, an opening located so as to lead through said top from the bottom of said depression, sealing means for forming a seal against said base located within said depression around said opening, and means for rotatably holding said spout part, said means engaging portions of said spout part so as to rotatably mount said spout part, in such a manner that said spout part is capable of being rotated between an open position in which said passage is aligned with said opening to a closed position in which said passage is spaced from said opening, said base engaging said sealing means during such rotation between said open and closed positions, a de-

- 5 mable wall extending from said top and spaced from said opening and said sealing means, a protuberance located on said base adjacent to said wall in a position so that as said spout is rotated from said open position to said closed position it engages said wall, temporarily deforming said wall so as to allow said protuberance to pass from adjacent to one portion of said wall to adjacent another portion of said wall, said wall and said protuberance being located so that the pressure exerted by said base of said spout part on said sealing means is maintained as said spout part is rotated between said open and closed positions in order to avoid or reduce the possibility of leakage between said base of said spout part and said sealing means. 15
2. A dispensing closure substantially as herein described with reference to, and as illustrated in, the accompanying drawings.
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Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press.
—1968. Published by The Patent Office, 25 Southampton Buildings, London, W.C.2,
from which copies may be obtained.

